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CATTELL 16 PERSONALITY PROFILES OF PATIENTS FOLLOWING CLOSED-HEAD INJURIES[1]

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Summary.—The personality scores from Cattell's 16 PF for 188 patients who had been referred for neuropsychological assessment following motor vehicle incidents were analyzed as a function of the severity of neuropsychological impairment (Halstead-Reitan Index) and time since the injury. Patients who were impaired (Index >0.4) exhibited lower scores on Factor B (more concrete thinking), Factor E (more submissive), and Factor F (more cautious) than patients who were not impaired. The presence of impairment accommodated only 10% of the variance in Factor E scores, associated with the largest group difference. There were no significant differences between scores on any of the personality factors, verbal intelligence, or standardized reading ability as a function of time since the injury.

All behaviours and patterns of behaviours emerge from brain activity. Changes in this activity subsequent to the impact of substantial mechanical energy to the skull and associated with residual neuropsychological deficits have been considered primary impedances to adaptation. To discern if the severity of the neuropsychological impairment, as inferred from the Halstead-Reitan Impairment Index, and the time since the trauma were associated with changes in self-reported behavioral patterns, the Cattell 16 Personality Profiles (Karson & O'Dell, 1976) of 188 patients (98 men; 90 women) who had been referred for assessment following impacts of mechanical energy to the skull (motor vehicle incidents) were gathered from a clinical data base. The means and standard deviations for the standardized scale ($M=100$, $SD=15$) for verbal intelligence from Wechsler's Adult Intelligence–Revised battery and the reading component from the Wide Range Achievement Test were 88 ($SD=11$) and 95 ($SD=14$), respectively. The percentages of patients with these scores below 70 were 2.6% and 6%, respectively. Items were read to patients whose Achievement scores were less than 85.

One-way analysis of variance (all dfs = 3,184) and Kruskal-Wallis nonparametric one-way analyses were completed for each of the 16 factors as a function of four groups of impairment (0–.2, .3–.4, .5–.8, and .9–1.0). The numbers of patients per group were 32, 64, 57, and 35, respectively. The only factors that differed as a function of these four categories of severity were Factor B ($F=3.75$; $\chi^2=12.59$, $p<.01$), Factor E ($F=12.28$; $\chi^2=32.51$, $p<.001$), and Factor F ($F=4.28$; $\chi^2=13.17$, $p<.01$). *Post hoc* analysis Tukey ($p<.05$) indicated that the most severely impaired group was engaged in

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more concrete thinking (Factor B) than the first group. The mean STEN score for the most impaired group was 4.2 ($SD = 1.6$) compared to 5.5 ($SD = 2.0$) for the least impaired group.

Groups 3 and 4, the two impaired groups (Halstead-Reitan Index > 0.4), scored as more submissive, dependent, considerate, and easily upset by authority ($M = 3.9$, $SD = 2.1$; $M = 4.3$, $SD = 2.1$, respectively) than Groups 1 and 2 ($M = 6.2$, $SD = 1.8$; $M = 5.8$, $SD = 2.2$, respectively). The two impaired groups scored as more depressed and pessimistic (Factor F: $M = 4.5$, $SD = 2.4$; $M = 4.3$, $SD = 2.3$) than the first two nonimpaired groups ($M = 5.9$, $SD = 1.7$; $M = 5.4$, $SD = 2.3$). The other factors did not display significant group differences. The grand means and standard deviations for these factors for all patients were A 4.8 ± 2.0; C 4.7 ± 1.9; G 5.7 ± 1.9; H 5.0 ± 2.1; I 6.0 ± 1.9; L 6.5 ± 2.0; M 4.3 ± 2.0; N 5.9 ± 2.3; O 6.4 ± 1.8; Q1 5.8 ± 2.0; Q2 6.4 ± 2.1; Q3 5.6 ± 1.8; and Q4 6.9 ± 2.1.

To discern significant differences between the personalities of patients as a function of years since injury (0.5–1 yr., $n = 65$; 1.0–1.9 yr., $n = 48$; 2.0–2.9 yr., $n = 35$; 3.0–3.9 yr., $n = 21$; >4 yr., $n = 19$) before the assessment, one-way analysis of variance was completed for each factor. There were no statistically significant differences for any of the 16 factors. Three-way analysis of variance as a function of impairment (0–0.4, 0.5–1.0), time since injury and sex for Factor B, Factor E, and Factor F did not yield additional statistically significant interactions between time since injury, extent of neuropsychological impairment, and sex. There was also no statistically significant difference in Verbal Scale IQ ($F = 1.45$) or reading skills ($F = 1.52$) as a function of time since injury.

Obviously, causal relationships cannot be discerned in a retrospective study. We have employed the 16 PF as an indicator of pre-incident personality and the profiles of the Minnesota Multiphasic Personality Inventory as an indicator of personality since the incident. Responses from patients and caregivers concerning the patient's pre-incident personality have strongly supported the validity of these assumptions. With the exception of small reduction in abstract thinking and greater submissiveness and cautiousness in expression, the severity of neuropsychological impairment was not a significant source in the variation of the 16 PF scores, whose averages for this population were all within the normal range. In contrast, averages for most MMPI scales were elevated in this population (Persinger, 1999).

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